STATE OF CALIFORNIA
STANDARD AGREEMENT
STD 213 (Rev 06/03)

AGREEMENT NUMBER
10-C0085
REGISTRATION NUMBER
1117946

1. This Agreement is entered into between the State Agency and the Contractor named below:

STATE AGENCY'S NAME
Department of Pesticide Regulation (DPR)

CONTRACTOR'S NAME
The Regents of the University of California

2. The term of this Agreement is: January 1, 2011 or upon final approval by the State, whichever occurs later through December 31, 2013

3. The maximum amount of this Agreement is: **$225,000.00**
Two hundred twenty-five thousand dollars and no cents

4. The parties agree to comply with the terms and conditions of the following exhibits which are by this reference made a part of the Agreement.

Exhibit A – Scope of Work	7 Pages
Exhibit B – Budget Detail and Payment Provisions	3 Pages
Exhibit C* – General Terms and Conditions (GIA 610)	*
Exhibit D - Special Terms and Conditions	1 Page
Exhibit E – Additional Provisions	1 Page
Exhibit F – Resume(s)	2 Pages

Items shown with an Asterisk (*), are hereby incorporated by reference and made part of this agreement as if attached hereto. *These documents can be viewed at* http://www.ols.dgs.ca.gov/Standard+Language/default.htm

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

CONTRACTOR

CONTRACTOR'S NAME *(if other than an individual, state whether a corporation, partnership, etc.)*
The Regents of the University of California

BY *(Authorized Signature)*: Gillian Fischer
DATE SIGNED *(Do not type)*: 11/16/10

PRINTED NAME AND TITLE OF PERSON SIGNING: **Gillian Fischer**
Principal Contract & Grant Officer

ADDRESS
Office of Research
200 University Office Bldg., Riverside, CA 92521-0217

STATE OF CALIFORNIA

AGENCY NAME
Department of Pesticide Regulation

BY *(Authorized Signature)*: JoAnne Payan, Assistant Director
DATE SIGNED *(Do not type)*: 12/2/10

PRINTED NAME AND TITLE OF PERSON SIGNING

ADDRESS
1001 I Street, Sacramento, CA 95814

California Department of General Services Use Only

APPROVED
DEC 24 2010
DEPT OF GENERAL SERVICES

☐ Exempt per:

EXHIBIT A
STANDARD AGREEMENT

SCOPE OF WORK

1. The Regents of the University of California, hereinafter referred to as UCR or Contractor, shall perform research for the Department of Pesticide Regulation, hereinafter referred to as DPR or Department.

2. This Agreement will commence on the start date January 1, 2011 as presented herein or upon final approval by the State, whichever is later and no work shall begin before that time. This Agreement is of no effect unless approved by the State. Contractor shall not receive payment for work performed prior to approval of the Agreement and before receipt of notice to proceed by the Contract Manager. This Agreement shall expire on December 31, 2013. The services shall be provided during normal working hours.

3. The Project Representatives during the term of this Agreement will be:

   A. All official communications, except invoices, from the Contractor to DPR shall be directed to the attention of the DPR Contract Manager, Xuyang Zhang, at:

Department of Pesticide Regulation
Environmental Monitoring Branch
Surface Water Program , MS-3B
1001 I Street
P.O. Box 4015
Sacramento, CA 95812-4015

Phone 916-445-3195 Fax 916-324-4088

E-mail: xzhang@cdpr.ca.gov

   B. All invoices from the Contractor to DPR shall be directed to:

Department of Pesticide Regulation
Attn: Accounts Payable
P.O. Box 4015, MS 4A
Sacramento, CA 95812-4015

EXHIBIT A
STANDARD AGREEMENT

C. All programmatic communications from DPR to the Contractor shall be directed to the Principal Investigator, Professor Jay Gan at:

Professor Jay Gan
Professor and CE Water Quality Specialist
Department of Environmental Sciences
UC Riverside, CA 92521

Phone: (951) 827-2712; Fax: (951) 827-3991

Email: jgan@ucr.edu

D. All administrative communications, except payments, from DPR to the Contractor shall be directed to the attention of Mark Carr, Extramural Funds Supervisor at:

Regents of the University of California,
Riverside Accounting Office
UC Riverside, CA 92521

Phone: (951) 827-1948; FAX: (951) 827-3314

Email Address: mark.carr@ucr.edu

E. All payments from DPR to the Contractor shall be directed to:

The Regents of the University of California
University of California, Riverside
Cashier's Office
Riverside, CA 92521

F. The project representatives during the term of this Agreement may be changed by mutual written agreement of the parties without the necessity of an amendment to the Agreement.

4. The Contractor will perform research on "pesticide contamination in urban surface water runoff" for the Department's Surface Water Program.

5. Background and Goals

Over the last few years, an increasing number of studies have linked the contamination of urban waterways with pesticide uses around residential homes. The most direct evidence includes detections of urban-use insecticides in runoff water draining directly from residential neighborhoods. Studies under controlled conditions further show that

EXHIBIT A
STANDARD AGREEMENT

pyrethroids and fipronil have substantial persistence on concrete surfaces, and their residues are available for contaminating runoff water long after treatment. Researchers at UC Davis and UC Riverside have also used small-scale plots to understand pesticide runoff potentials as a function of formulations, time intervals after treatment, and surface types. While data generated from these studies have contributed significantly to a better understanding of pesticide behavior under environmental conditions unique to residential settings, there are several apparent information gaps.

Studies so far have evaluated landscape surfaces in an isolated fashion. While the derived information explains how pesticides behave on specific urban surfaces, the relative contribution of these landscape components (e.g., concrete, lawn, mulched soil, bare soil) in a typical residential setting is essentially unknown. A typical residential setting is an integration of multiple landscape surfaces, and it is likely that pesticide residues are transferred between these compartments. For instance, pesticides applied to soil around a house may be transported onto sidewalks and driveway as fine soil particles and organic matter particles, via the motion of wind or water, from where they can enter the runoff water sweeping over the concrete surfaces. On the other hand, residues from soil or concrete surfaces may be transported into a grassed area, by wind or water, where the residues may be effectively retained. Understanding the interactions of these components in an integrated manner will not only reveal the relative importance of individual components, but also provide information that can be used by landscape architects to design landscapes with the capacity for reducing water runoff and pesticide off-site movement.

Recent advances suggest that it is unlikely a single practice would be effective at reducing urban pesticide runoff. Rather, for effective mitigation of off-site pesticide movement from residential homes, a holistic approach is necessary. The mitigation strategies may be generally categorized into those related to pesticides, and those related to the landscape. The pesticide-related options may include outreach to educate pesticide users, modifications of pesticide application techniques, selection of pesticide formulations; among others. The landscape-related practices may include configurations of landscapes and modifications to landscapes. Feasibility will be an important consideration for any landscape-related mitigation practice. However, despite the clear importance (and urgency) to develop mitigation practices, other than outreach and education, so far very few other options have been carefully evaluated.

The objectives of this three-year project are two-fold. The first objective is to better understand transfer of pesticide residues between landscape compartments, and to identify the most important source(s) for pesticide contamination of residential runoff. The other objective is to quantitatively evaluate a number of pesticide application and landscape-related mitigation options for their effectiveness at reducing the volume and/or level of pesticide-contaminated runoff from residential homes.

EXHIBIT A
STANDARD AGREEMENT

6. **Principal Investigator**

Jay Gan, Ph.D., will be acting as Principal Investigator on this research project in his capacity as Professor of Environmental Chemistry, Department of Environmental Sciences, University of California, Riverside.

7. **Work to Be Performed**

A. Task 1. Survey Pesticide Residues in Loose Particles on Hardscape Surfaces

1) This task involves sampling of loose particles (dust particles) under dry weather conditions to determine if significant pesticide residues are present in these loose particles that are susceptible to being carried away in runoff. This information will be used to assess if accumulation of loose particles over time contributes significantly to pesticide contamination of runoff water during irrigation and rain storms (especially the first storm after the dry season).

2) Sampling sites and sampling: Sampling will take place in October/November before the first rain storm. If the results are positive, a more systematic approach, such as multiple sampling time points through out the year, may be considered. For each sampling sequence, select about 20 single-family homes (each) in City of Riverside or Orange County in a random fashion. Basic characteristics of each house, including fractions of hardscapes, roofs, and lawns, will be recorded or estimated using an on-line tool. It would be difficult to obtain precise or meaningful pesticide use data for a specific house, given that the treatments by a licensed applicator are propriatary information and that homeowners may also apply pesticides in an arbitrary fashion. The use of a large number of sampling sites is intended to generate representative data. At each home site, select 4 areas for sampling of the loose particles with a vacuum. These areas will include the middle of street, street sidewalk, middle of driveway, and perimeter sidewalk. A portable vacuum will be used to collect loose particles from a marked area (e.g., 150 cm by 150 cm) onto a glass fiber filter. A new filter will be used for each sample. The vacuum will be cleaned between samples to eliminate cross contamination.

3) Measure the mass of the collected particles. Use solvent extraction to extract pesticide residues, and GC-MS-MS to quantify pesticide residues on a per mass basis. The target pesticides will include all pyrethroids, fipronil, fipronil metabolites, chlorpyrifos, diazinon, malathion, and carbaryl.

4) Estimate the per area pesticide residues available for off-site movement via runoff. The results may be used by others (e.g., DPR scientists) to model pesticide loadings during the first rain storm under different conditions.

EXHIBIT A
STANDARD AGREEMENT

B. Task 2. Pesticide Transfer between Different Landscape Components

1) This task considers transfer of pesticide residues from one landscape component to another. The information may be used to identify landscape component(s) that contribute the most to pesticide off-site movement via runoff.

2) Construct plot-scale landscapes containing equal areas of concrete, grass, and mulched (or bare) soil at the UC-South Coast Research and Education Center (SCREC). An architect will provide the designs (configurations) representative of residential homes. A slope of 2% will be used for all components. The design will be such that all components are bordering each other, and that each component will have a runoff collection spot that receives runoff only from that component. The dimension of each component will be relatively small (e.g., less than 1 m by 1 m), so that multiple landscape "models" can be built and used.

3) Two experiments will be carried out using the landscape models. In the first experiments, all components will receive the same pesticide treatment. After a given time interval (e.g., 24 h, 7 d), simulated rain will be applied to all components to generate runoff. Before the simulated rainfall, the moisture contents in the grass and mulched compotents will be measured and recorded. The volume of runoff from each component will be measured. Total suspended solids, total organic carbon content, and dissolved organic carbon content, will be measured for each runoff sample. The runoff water will be analyzed for pesticide concentrations. The results will provide information on the relative runoff potential from different landscape components. Given that pesticide treatment and rainfall simulation are the same across the different components, a ranking may be obtained. One drawback is that insecticides are rarely applied to all landscape components in the same fashion (e.g., same application rates, same products, or same formulations). This deficiency may be addressed through the next experiment.

4) Additional variables to consider may include sequential runoff events, rain intensity and slopes of landscape compartments.

5) In the second experiment, pesticide treatment will be made to just one of the three components, using typical treatment conditions. After a relatively long time interval (to allow potential pesticide residue transfer to take place), simulated rainfall will be applied to all components, and pesticide residues in runoff water will be determined from all individual components. The results will reveal if pesticides applied to soil surfaces (or lawn) have the potential to transfer onto hardscape surfaces. The layout of these components may be modified to answer other questions. For instance, if the concrete (or mulched soil) is placed above the grass (in terms of runoff water flow direction), the results may show if pesticides applied to the concrete (or soil) may be effectively intercepted by the

EXHIBIT A
STANDARD AGREEMENT

mulched soil or grass. The information may be potentially used for designing improved landscapes to reduce pesticide off-site movement.

6) It is possible that once the transfer potentials are known between these components, simple simulation models may be developed to describe pesticide distribution and runoff potentials at a larger scale and with different landscape configurations. Landscape designs or configurations with the least runoff potential may be thus identified.

C. Task 3. Evaluate Runoff Mitigation Practices

1) This task will evaluate a number of runoff mitigation practices to determine their effectiveness for minimizing pesticide runoff. The potential mitigation practices include pin-strip spray vs. fan spray (application related), and various landscape-related variables such as elevation of lawn (soil) vs. concrete surface, mulches, grass swells, perforated drainage pipes, and porous (infiltrating) materials (pavers or cement). Other practices may be added at a later time if necessary.

2) Dr. Rust and Dr. Greenberg at UCR have shown that pin-strip spray, due to its more precise a.i. delivery and smaller treatment area, resulted in reduced pesticide runoff when compared with the conventional fan spray application. However, the residential homes used in their study are different in many ways, which contributed to the large variations in their results. Small plots (e.g., concrete slabs) will be used to compare these (and potentially other, such as foam application) application methods under well-controlled conditions. The use of controlled conditions will allow quantitative evaluation of different application methods in reducing pesticide runoff. For instance, the % reduction (as compared to fan spray) by the use of pin-strip spray may be known for different pesticides.

3) Plot-scale setups will be used to evaluate the landscape-related mitigation options. For instance, it is believed that when the grass (lawn) is higher (in elevation) than the concrete pavement, more runoff water may be generated from irrigation (or light rain). Conversely, if the lawn is lower than the concrete surface, runoff from the concrete may be absorbed by the grass, leading to reduced off-site pesticide transport. Different small-scale plots will be constructed at SCREC to evaluate differences in pesticide runoff as a result of the relative elevation of lawn (or mulched soil) vs. concrete, perforated vs. non-perforated drainage pipes (for mulched soil and grass), grass swells, and porous pavers vs. concrete. Other modifications will be added when justified.

4) The effectiveness of these mitigation options will be quantified, and mitigation options with significant potential for reducing pesticide runoff will be identified. Replicates will be included in each treatment, so that the results may be

EXHIBIT A
STANDARD AGREEMENT

analyzed statistically. Feasibility factors, including cost and likelihood for the modification, will also be considered in evaluating or recommending a specific mitigation option.

D. Task 4. Disseminate Information

1) Submit final report of the study results to DPR.
2) Give a presentation of final results to DPR.
3) Working with Darren Haver and Cheryl Wilen, make the study findings, along with the test plots, available for outreach activities that may reach a broad audience through tours, field trips, workgroup meetings and workshops.

8. Project Timeline

	2010-11				2011-12				2012-13			
Activities	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall
1. Construction of test plots	X	X			X	X			X	X		
2. Survey			X	X								
3. Integrated evaluation			X	X	X	X	X					
4. Mitigation options						X	X	X	X	X	X	
5. Outreach/education				X	X	X	X	X	X	X	X	X

9. DPR Responsibilities

DPR shall provide review and approval of study protocol and report within 30 days of submission by UCR.

EXHIBIT B
Standard Agreement

BUDGET DETAIL AND PAYMENT PROVISIONS

1. Invoicing

A. For services satisfactorily rendered and approved by the Contract Manager and upon receipt and approval of the invoices, DPR agrees to compensate Contractor, in arrears, for actual allowable costs incurred as specified herein and in accordance with the rates specified herein or attached hereto. Incomplete or disputed invoices shall be returned to Contractor, unpaid, for correction.

B. Invoices shall include the Agreement Number and shall be submitted in triplicate, not more frequently than monthly or less than quarterly, in arrears, to:

Department of Pesticide Regulation
Attn: Accounts Payable
P.O. Box 4015, MS-4A
Sacramento, CA 95812-4015

2. Budget Contingency Clause

A. It is mutually agreed that if the Budget Act of the current year and/or any subsequent years covered under this Agreement does not appropriate sufficient funds for the program, this Agreement shall be of no further force and effect. In this event, DPR shall have no liability to pay any funds whatsoever to Contractor or to furnish any other considerations under this Agreement and Contractor shall not be obligated to perform any provisions of this Agreement.

B. If funding for any fiscal year is reduced or deleted by the Budget Act for purposes of this program, DPR shall have the option to either cancel this Agreement with no liability occurring to DPR, or offer an Agreement Amendment to Contractor to reflect the reduced amount.

3. Payment

A. Costs for this Agreement shall be computed in accordance with State Administrative Manual (SAM) Sections 8752 and 8752.1.

B. Nothing herein contained shall preclude advance payments pursuant to Article 1, Chapter 3, Part 1, Division 3, Title 2 of the California Government Code, Sections 11256 and 11257.

C. Transportation and subsistence costs shall not exceed rates authorized to be paid UC system non-represented employees traveling within California.

D. Contractor will be reimbursed for direct costs, other than salary costs, that are identified in the Contractor's rates.

EXHIBIT B
Standard Agreement

E. Contractor will bill in arrears for costs incurred during the billing period. If applicable, salary costs will be itemized and billed by position. Documentation supporting specific salary costs will be presented if requested by DPR. Non-wage costs will be billed, in summary, according to general expense categories. A detailed report of transactions will support the billing. Individual expenditures exceeding $500.00 will be supported by a photocopy of the original documentation. Documentation in support of expenditures less than $500.00 will be presented if requested by DPR.

F. Contractor shall not commence performance of work or services until this contract has been approved by the State. No payment will be made prior to approval nor for any work performed prior to approval of this Agreement.Ten percent (10%) of the total amount of this Agreement shall be withheld by DPR until the satisfactory completion of this Agreement.

4. **Rates**

Rates for these services are as follows:.

Table I - Details Budget

Budget Line Item	10-11	11-12	12-13	TAL
1. Salaries & Wages	$39,636	$40,429	$41,237	$121,302
2. Direct Benefits	$7,927	$8,086	$8,247	$24,260
3. Travel (in state) ①	$1,000	$1,000	$1,000	$3,000
4. Supplies ②	$11,437	$10,485	$9,516	$31,438
4. Overhead @25% ③	$15,000	$15,000	$15,000	$45,000
Total	**$75,000**	**$75,000**	**$75,000**	**$225,000**

① Travel – To and from study site in Orange County.
② Supplies – Includes materials used for constructing test plots, purchase of glassware, sampling equipment, chemicals and other consumables used for experiments, and sample preparation and analysis.
③ Overhead –Includes department and general administration, sponsored projects administration, building and equipment depreciation, building interest, operations and maintenance, library, and student services administration.

EXHIBIT B
Standard Agreement

Table II - Details Personnel

Classification	Monthly Salary	Number of Months	Percentage of Time ①	Total
Post Doctorial Researcher (FY 10-11)	$3,303	12	100%	$39,636
Post Doctorial Researcher (FY 11-12)	$3,369	12	100%	$40,429
Post Doctorial Researcher (FY 12-13) Represents a 2.0% pay increase	$3,436	12	100%	$41,237
Total Personnel		36	100%	$121,302
Direct Benefits:				
Post Doctorial Researcher @20.00%	**(FY10-11)**			$7,927
Post Doctorial Researcher @20.00%	**(FY11-12)**			$8,086
Post Doctorial Researcher @20.00%	**(FY12-13)**			$8,247
			Total Benefits	$24,260
			Total Personnel and Benefits	$145,562

5. **Cost Limitation**

   A. The total amount of this Agreement shall not exceed $225,000.00.

   B. It is understood and agreed that this total is an estimate and that DPR will pay for only those services actually rendered as authorized by the DPR Contract Manager or his/her designee.

EXHIBIT D
Standard Agreement

SPECIAL TERMS AND CONDITIONS

1. Termination

A. Either Party reserves the right to terminate this agreement without cause upon thirty (30) days written notice to the other Party, or immediately in the event of a material breach. In the event of termination, Contractor shall be paid for all allowable costs incurred up to the date of termination, including any non-cancelable obligations.

B. In the event that the total Agreement amount is expended prior to the expiration date, DPR may, at its sole discretion, terminate this Agreement with 30 days notice to contractor.

2. Subcontracting

Contractor shall perform the work contemplated with resources available within its own organization and no portion of the work shall be subcontracted.

3. Dispute Resolution

A. DPR reserves the right to issue an order to stop work in the event that a dispute should arise, or in the event that the DPR gives the performing agency a notice that this Agreement will be terminated. If DPR exercises this right, the stop-work order will be in effect until the dispute has been resolved or this Agreement has been terminated.

B. Any dispute concerning a question of fact arising under the terms of this Agreement which is not disposed of within a reasonable period of time by agency employees normally responsible for the administration of this agreement, shall be brought to the attention of the Executive Officer or designated representative of each agency for joint resolution.

C. The Contractor shall continue to perform all its responsibilities under this agreement during any dispute until notified to stop work or expiration of this Agreement.

4. Harassment Free Workplace

The Department of Pesticide Regulation (DPR) is committed to providing a safe, secure environment, free from sexual misconduct. It is policy of the Department that employees have the right to work in an environment that is free from all forms of discrimination, including sexual harassment. This policy specifically speaks to freedom from a sexually harassing act that results in the creation of an intimidating, hostile or offensive work environment or that otherwise interferes with an individual's employment or work performance. As a Contractor with DPR, you and your staff are expected to comply with a standard of conduct that is respectful and courteous to DPR employees and all other persons contacted during the performance of this Agreement. Sexual harassment is unacceptable, will not be tolerated; and may be cause for prohibiting some or all of the Contractor's staff from performing work under this Agreement.

EXHIBIT E
Standard Agreement

ADDITIONAL PROVISIONS

1. Contractor Evaluation

The Contractor is hereby notified that its performance under this Agreement may be evaluated within thirty (30) calendar days following the Expiration of this Agreement. The evaluation may include statements on the adequacy of the service or the product, whether the service was satisfactory, whether the service or the product was provided or completed within the time limitations, reasons for time or cost overruns, whether the product is operational or being utilized by the State, and/or the State plans for implementation, and the State's general impression as to the competency of the Contractor and its staff. The evaluation shall be filed in the State's official Contractor Evaluation File.

2. Consulting Services

A. The Contractor is hereby advised of its duties, obligations and rights under Public Contract Code § 10335.5.

B. The Contractor's key personnel assigned to perform work under this Agreement and their level of responsibility shall be mutually acceptable to the State and the Contractor.

3. Disposition of Work Product

The Department retains use and non-commercial governmental distribution rights to all deliverables identified in this Agreement in Exhibit A, Item 7. Work to Be Performed.

EXHIBIT F
Standard Agreement

Jay J. Gan
Professor of Environmental Chemistry
Department of Environmental Sciences, UC Riverside, CA 92521
Phone: (951) 827-2712; Fax: (951) 827-3993; email: jgan@ ucr.edu

I. Professional and Education Background

7.2004 - now	Professor & Water Quality Specialist, Dept. Environmental Sciences, Univ. California, Riverside
10.2007 - 7.2010	Chair, Dept. Environmental Sciences, Univ. California, Riverside
7.2003-6.2004	Associate Professor & Water Quality Specialist, Dept. Environmental Sciences, Univ. California, Riverside
7.2001-6.2003	Assistant Professor & Water Quality Specialist, Dept. Environmental Sciences, Univ. California, Riverside
7.1999-7.2001	Associate Researcher, USDA-ARS US Salinity Laboratory and Dept. Environmental Sciences, Univ. California, Riverside
5.1995-7.1999	Assistant Researcher, USDA-ARS US Salinity Laboratory and Dept. Environmental Sciences, Univ. California, Riverside
3.1993-5.1995	Postdoctoral Researcher, USDA-ARS US Salinity Laboratory and Dept. Environmental Sciences, Univ. California, Riverside
8.1991-3.1993	Postdoctoral Researcher, Dept. Soil, Air and Climate, Univ. Minnesota, St. Paul, MN
2.1990-8.1991	Visiting Fellow, Agrochemicals Unit, Agricultural Research Laboratory, the International Atomic Energy Agency (UN), Seibersdorf, Austria
9.1982-7.1988	Ph.D., Environmental Chemistry, Zhejiang University, Hangzhou, China

II. Expertise and Interest

- Environmental chemistry, fate, and risk assessment of organic contaminants
- Environmental processes of organic pollutants in ecosystems, including biotic and abiotic transformation, phase partition, leaching, runoff, aquatic bioaccumulation, and plant uptake
- Analysis of trace organic residues in environmental matrices
- Soil, water, and air resources and processes
- Mitigation strategies and risk-reduction practices

III. Professional Hornors and Service

- Fellow, Soil Science Society of America (SSSA), 2010
- Fellow, AAAS (American Association for Advancement of Science), 2008
- Fellow, ASA (American Society of Agronomy), 2005
- Editorial Board, *Environmental Toxicology and Chemistry*, 2006.9 – now.
- Associate Editor, *Journal of Environmental Quality*, 01/2000 to 12/2006.
- Chair-Elect, Division S-11 "Soil and Environmental Quality", SSSA, 2010

EXHIBIT F
Standard Agreement

IV. Selected Publications

Books (2 total)

1. Gan, J., P. Zhu, S.D. Aust, and A.T. Lemley. *Pesticide Decontamination and Detoxification*. American Chemical Society Symposium Series 863, ACS, Washington, DC, 2003. 266p
2. Gan, J., F. Spurlock, P. Hendley, and D. Weston. *Synthetic Pyrethroids: Occurrence and Effects in Aquatic Environments*. American Chemical Society Symposium Series 991, ACS, Washington, DC, 2008. 450 pp.

Recent Publications (from 165):

1. Gan, J., Q. Wang, S.R. Yates, W.C. Koskinen and W.A. Jury. 2002. Dechlorination of chloroacetanilide herbicides by thiosulfate salts. *PNAS (USA)* 99: 5189-5194.
2. Gan, J., Y. Zhu, C. Wilen, D. Crowley and D. Pittenger. 2003. Effects of planting covers on herbicide persistence in landscape soils. *Environ. Sci. Technol.* 37: 2775-2779.
3. Lee, S.J., J. Gan, W.P. Liu and M.A. Anderson. 2003. Evaluation of K_d underestimation using solid phase microextraction. *Environ. Sci. Technol.* 37: 5597-5602.
4. Bondarenko, S. and J. Gan. 2004. Degradation and adsorption of selected organophosphate and carbamate insecticides in urban stream sediments. *Environ. Toxicol. Chem.* 23: 1809-1814.
5. Liu, W.P., J. Gan, D. Schlenk and W.A. Jury. 2005. Enantioselectivity in environmental safety of current chiral insecticides. *PNAS (USA)* 103: 701-706.
6. Gan, J., S. Bondarenko, F. Ernst, W. Yang, S.B. Ries, and D.L. Sedlak. 2006. Leaching of N-nitrosodimethylamine (NDMA) in turfgrass soils during wastewater irrigation. *J. Environ. Qual.* 35: 277-284.
7. Yang, W.C., F. Spurlock, W.P. Liu, and J. Gan. 2006. Inhibition of aquatic toxicity of synthetic pyrethroids by suspended sediment. *Environ. Toxicol. Chem.* 25: 1913-1919.
8. Bondarenko, S., A. Putt, N. Poletika, and J. Gan. 2006. Phase distribution of synthetic pyrethroids in sediment. *Environ. Toxicol. Chem.* 25: 3148-3154.
9. Budd, R., S. Bondarenko, D. Haver, J. Kabashima, and J. Gan. 2007. Occurrence and bioavailability of pyrethroids in sediment in a mixed land use watershed. *J. Environ. Qual.* 36: 1006-1012.
10. Hunter, W., Y.P. Xu, F. Spurlock, and J. Gan. 2008. Using disposable polydimethylsiloxane (PDMS) fibers to assess the bioavailability of permethrin in sediment *Environmental Toxicology and Chemistry* 27: 568–575.
11. Yang, Y., W. Hunter, S. Tao, and J. Gan. 2008. Relationships between desorption intervals and availability of sediment-borne hydrophobic contaminants. *Environmental Sciences and Technology* 42: 8446-8451.
12. Lin, K.D., W.P. Liu, and J. Gan. 2009. Oxidative removal of bisphenol-A with manganese dioxide: Kinetics, products, and pathways. *Environmental Science & Technology* 43: 3860-3864.
13. Budd, R., A. O'Geen, K. Goh, S. Bondarenko, and J. Gan. 2009. Efficacy of constructed wetlands in pesticide removal from tailwaters in the Central Valley, California. *Environmental Science & Technology* 43: 2925-2930.